

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

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NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(PCT Rule 71.1)

Date of mailing
(day/month/year)

17.12.2004

Applicant's or agent's file reference
51929WO

IMPORTANT NOTIFICATION

International application No.
PCT/EP 03/09349

International filing date (day/month/year)
22.08.2003

Priority date (day/month/year)
23.08.2002

Applicant
FAST TECHNOLOGY AG et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international
preliminary examining authority:



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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 51929WO		FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/EP 03/09349		International filing date (day/month/year) 22.08.2003	Priority date (day/month/year) 23.08.2002	
International Patent Classification (IPC) or national classification and IPC B25B23/14				
Applicant FAST TECHNOLOGY AG et al.				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 3 sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 18.03.2004		Date of completion of this report 17.12.2004		
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer Kühn, T Telephone No. +49 89 2399-7883		



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP 03/09349

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-13 as originally filed

Claims, Numbers

1-11 received on 03.12.2004 with letter of 02.12.2004

Drawings, Sheets

1/2-2/2 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP 03/09349

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-11
	No: Claims	
Inventive step (IS)	Yes: Claims	1-11
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-11
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. The following international preliminary examination report is based on a clarified wording (cf. interpretation in bold type) of independent claims 1 and 9.

2. Independent claim 1

2.1 Relevant prior art

DE 196 38 191 A discloses a torque transducer assembly **for use in conjunction with a power torque tool** comprising:

- a) a housing 9 having an opening therethrough;
- b) a torque transmission shaft 3 extending in said opening and rotatable about an axis extending through said opening,
- c) said shaft having respective end portions 3 accessible from exteriorly of said housing (cf. fig. 1),
- d) a torque transducer element 5 integral with, or carried by said shaft to emanate a magnetic field dependent on the torque in the shaft (cf. col.1, lines 43-49),
- e) a magnetic field sensor arrangement 1,6 located within said housing adjacent said element for sensing the torque-dependent field (cf. col.1, lines 13-23),
- f) said sensor arrangement being operable to provide a torque-dependent signal; and
- g) means (cf. col.1, lines 32-34) for communicating said torque-dependent signal to a signal processing unit externally of the assembly.

2.2 Differences

The difference between the subject-matter of claim 1 and **DE 196 38 191 A** is that the torque transducer assembly further comprises a helical spring, whereby a first portion of the helical spring is engaged with the housing of the torque transducer assembly and a second portion is engageable with the **housing** of a power torque tool to secure the housing of the torque transducer assembly against rotation with respect to said **housing of the power torque tool**.

Since the subject-matter of claim 1 likewise is not known from any other of the available prior art documents, claim 1 fulfils the requirements of Article 33(2) PCT.

2.3 Objective problem

In a torque transducer assembly as known from **DE 196 38 191 A** with the aforementioned differences, the distinguishing features solve the objective problem of providing a torque transducer assembly which is mountable on a fastening tool.

2.4 Inventive step

The provision of a spring as a coupling means for attaching the adaptor to the fastening tool is not apparent from any of the remaining available prior art documents.

Therefore, claim 1 meets the requirements of Article 33(3) PCT.

2.5 Industrial applicability

Since the torque transducer assembly according to claim 1 can be made and used in industry, claim 1 meets the requirements of Article 33(4) PCT.

3. Independent claim 9

The same reasoning applies mutatis-mutandis to the subject-matter of claim 9, which consequently also meets the requirements of Articles 33(2) to 33(4) PCT.

4. Dependent claims

Dependent claims 2-8 and 10,11 define embodiments of the torque transducer assembly according to claims 1 and 9.

Therefore, they also meet the requirements of Articles 33(2) to 33(4) PCT.

5. Further points

5.1 Although claims 1 and 9 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought. The aforementioned claims therefore lack conciseness and as such do not meet the requirements of Article 6 PCT.

5.2 Lines 10-12 and lines 13-15 on page 3 of claim 9 are identical.

Application No.: PCT/EP2003/009349
Applicant: Fast Technology AG
Our Ref.: 51929 WO

Claims

1. A torque transducer assembly comprising:
 - 5 a housing having an opening therethrough;
 - a torque transmission shaft extending in said opening and rotatable about an axis extending through said opening, said shaft having respective end portions accessible from exteriorly of said housing,
 - 10 a torque transducer element integral with, or carried by, said shaft to emanate a magnetic field dependent on the torque in the shaft,
 - a magnetic field sensor arrangement located within said housing adjacent said element for sensing the torque-dependent field, said sensor arrangement being operable to provide a torque-dependent signal; and
 - 15 means for communicating said torque-dependent signal to a signal externally of the assembly;
 - a helical spring having a first portion engaged with the housing and a second portion engageable with the body of a power torque tool to secure the housing against rotation with respect to said body.
- 20 2. A torque transducer assembly as claimed in Claim 1 in which one end portion of said shaft projects exteriorly of said housing and provides an output portion of the shaft.
3. A torque transducer assembly as claimed in any one of Claims 1 to 2 in which said magnetic field sensor arrangement comprises at least one magnetic field sensor device.
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4. A torque transducer assembly as claimed in Claim 3 in which said magnetic field sensor arrangement further comprises a circuit into which the magnetic field sensor device(s) is connected, the circuit and magnetic field sensor device(s) being supported

by said housing, the circuit being operable to output signals representing torque through the means for communicating.

5. A torque transducer comprising a torque transducer assembly which is as claimed in any one of Claims 1 to 4 and a signal processing unit in communication with said torque transducer assembly for processing said torque-dependent signals, wherein said signal processing unit is operable to process pulse signals representing pulses of torque and is responsive to the amplitude of each pulse signal with reference to the quiescent signal level on which it is imposed.

6. A torque transducer as claimed in Claim 4 or 5 wherein the means for communication utilizes a wire-less (free of wire connection) form of communication.

7. A torque transducer comprising a torque transducer assembly which is as claimed in Claim 5 and a signal processing unit connected to said means for communication by an electrical cable, said signal processing unit comprising a circuit into which the magnetic field sensor device(s) is connected through the cable, the circuit being operable to output signals representing sensed torque.

8. A transducer as claimed in Claim 7 in which signal processing unit is operable to process pulse signals representing pulses of torque and is responsive to the amplitude of each pulse signal with reference to the quiescent level on which it is imposed.

9. A torque transducer assembly comprising a housing having an opening therethrough, a torque transmission shaft disposed in said housing for rotation about an axis extending through said opening, said shaft having a first portion supported in an annular bush secured to the housing and from which first portion and output portion of the shaft projects, said first portion having a torque transducer element integral therewith, or carried thereby, to emanate a magnetic field dependent on the torque in the shaft, a magnetic

field sensor arrangement embedded in said bush adjacent said element for providing a torque-dependent signal,

said shaft having a second portion distal said output portion and at least partially contained within said opening,

5 said second portion being of larger cross-section than said first portion and abutting said bush,

first means for locating said second portion to rotate with respect to said housing and second means for applying axial force between the housing and said second portion to maintain same in abutment;

10 a helical spring having a first portion engaged with the housing and a second portion engageable with the body of a power torque tool to secure the housing against rotation with respect to said body;

15 a helical spring having a first portion engaged with the housing and a second portion engageable with the body of a power torque tool to secure the housing against rotation with respect to said body.

10. A torque transducer assembly as claimed in Claim 9 in which said first means comprises a bushing located in a circumferential groove around said second portion and engaging an inner surface of said opening.

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11. A torque transducer as claimed in Claim 10 in which said second means comprises a retainer ring secured in said opening to apply an axial force to said bushing.

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